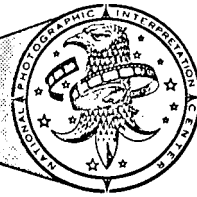
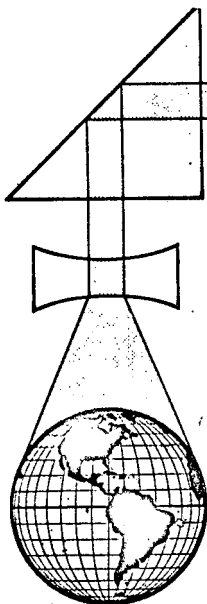


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Declass Review by NGA.

R & D NEWS NOTES

TECHNICAL SERVICES and SUPPORT GROUP, NPIC 25X

Vol. 1, No. 3

April 1968

The following items have been taken from R&D progress reports of the Technical Services and Support Group and are being distributed because of their general interest. We would like to know what questions or problems you have concerning the items reported or any other R&D areas. A form is attached that will make it more convenient for you to submit your comments. An effort will be made to answer them either personally or in future R&D News Notes.

Donut Shaped Cover Plate

The capabilities of microscopes may be more fully utilized by using a newly designed film holddown device. The new holddown devices are donut shaped and are made of Teflon, a white plastic material with a low coefficient of friction. Since they have a hole in the center, there is no material between the film and the microscope objective lens and the resolving power of the microscope is thus at its maximum. They provide an additional advantage of not being broken if accidentally dropped. The devices have been borrowed from the Naval Reconnaissance Technical Support Center for evaluation at NPIC. The Project Monitor is

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GROUP 1

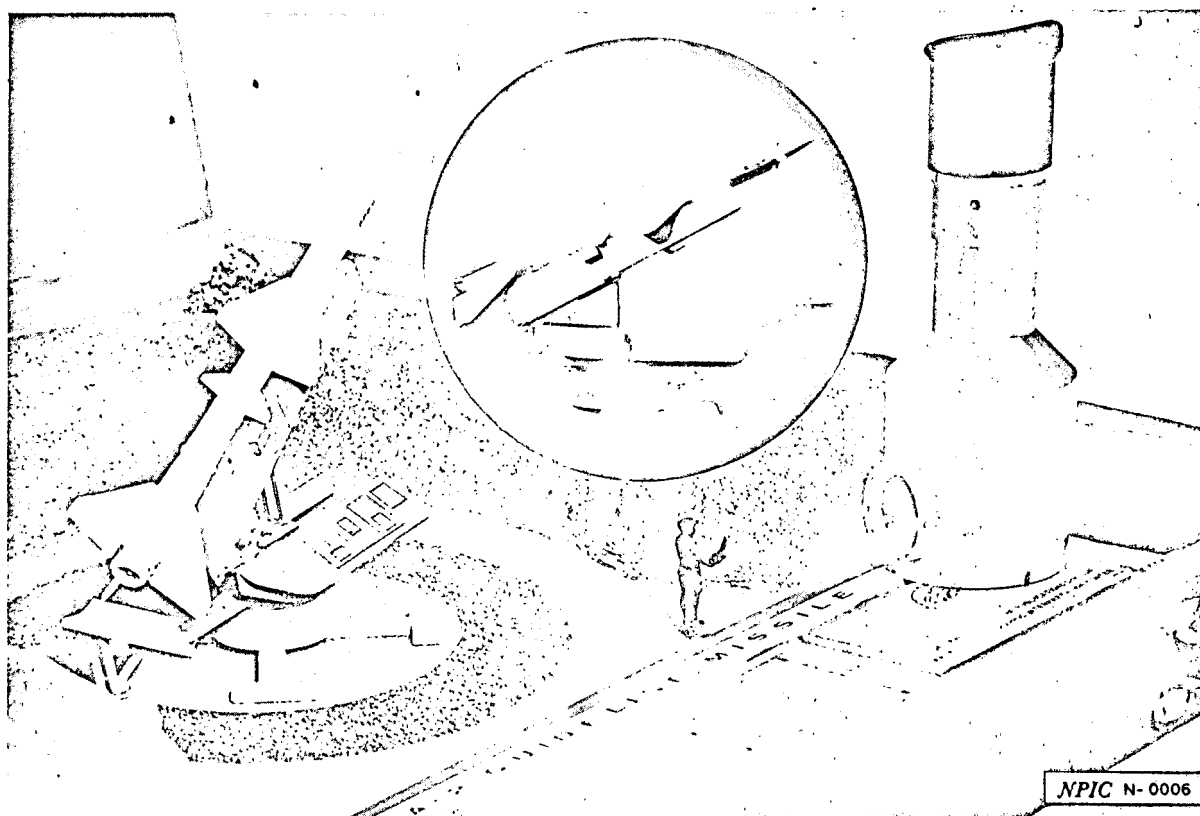
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Making Scale Models More Useful

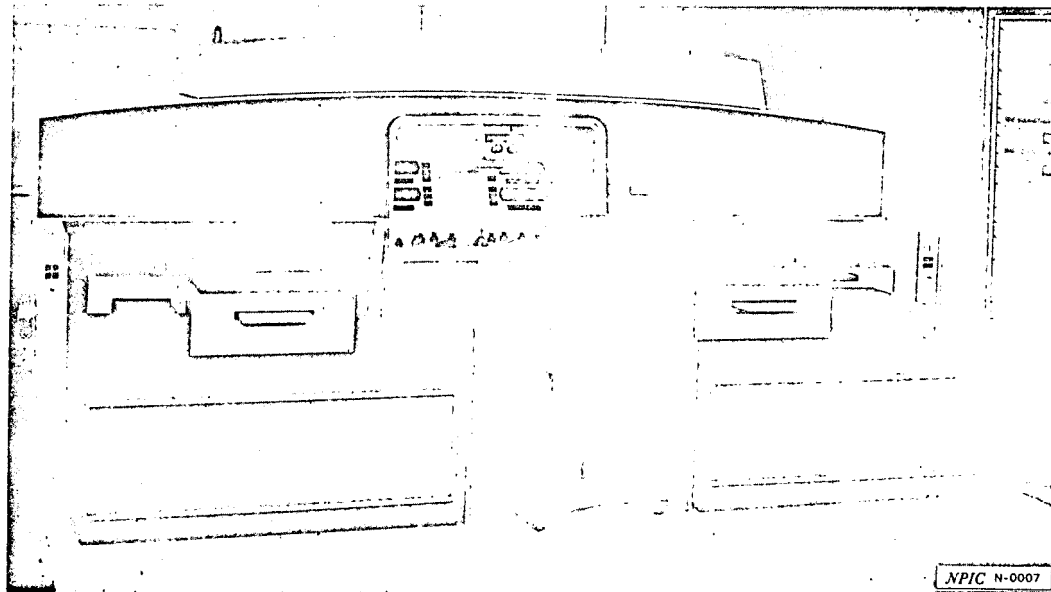
An optical device has been developed that gives the observer the sensation of looking at a full size scene when in reality he is viewing a three dimensional scale model. The Perspective Model Viewer is a small, free standing, right-angle telescopic device yielding a wide field, reduced size image. Ordinary microscope objective and eyepiece lenses are used in reverse order to yield the required reduction in image size. A prism produces the necessary ninety degree bending of the viewing direction. The Viewer can be placed at various locations on a scale model to obtain the same perspective view that an observer would see if he were standing at ground level at the original site. The illustration shows a model of a typical SA-2 site with the Perspective Model Viewer in position. The insert depicts the view as seen through the instrument. The man in the foreground does not appear blurred to the human eye. []

[] Room 4N411) developed the Viewer and can furnish detailed plans to interested parties. Purchased parts cost about \$50 per viewer and labor requirements are about 40 hours per viewer in small quantities of production (photo is classified Secret, viewer is [])



SECRET14 Tons or .5 Microns

To make an instrument capable of measuring an object on film to within five ten-thousandths of the thickness of a dime appears to be an incredible task. However, this task was undertaken by the [REDACTED] in order to produce a mensuration device capable of measuring our best quality of photography well into the 1970's. The High Precision Stereo Comparator can view two images simultaneously, having facilities for manipulating images of different missions as well as stereo images from the same mission. These manipulations to provide stereo viewing are done automatically thus relieving the operator of this tedious and difficult task. The new comparator will



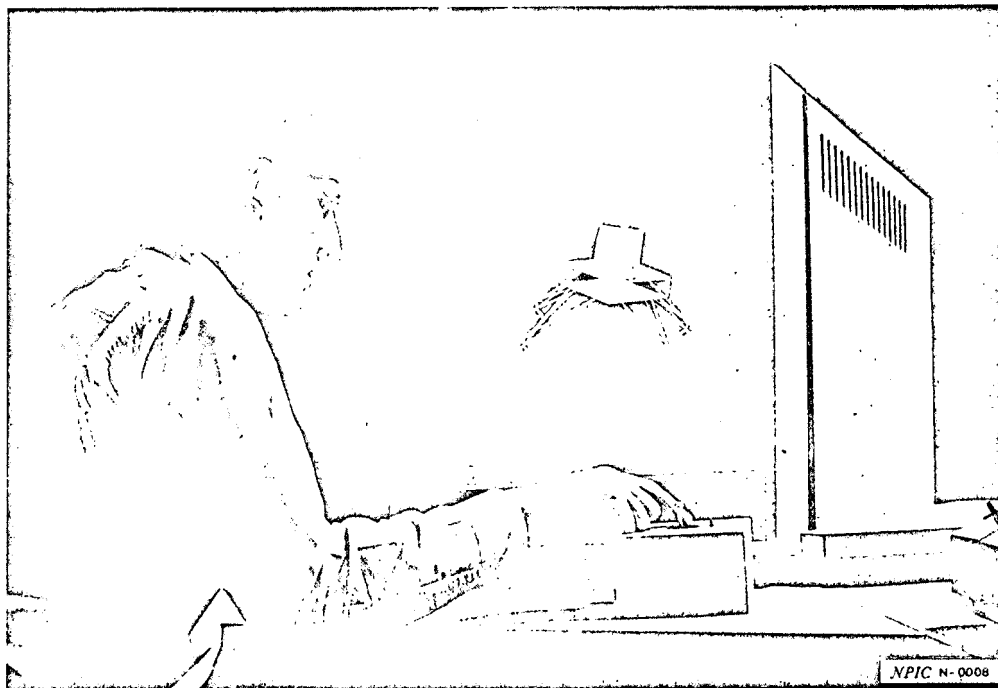
have an optical system with a zoom magnification from 10X to 200X and a resolution up to 800 lines/mm using a xenon arc light. One hundred and sixty pieces of glass comprise the maze of the optical train. Special care must be taken in installing the equipment to minimize any building vibrations that would tend to reduce the accuracy of the comparator. The fabrication stage will take 21 months and NPIC expects delivery of the new Stereo Comparator in about two years. This system's maximum absolute error of coordinate measuring will be only .5 microns. It does all this and weighs only 14 tons. The Project Monitor is [REDACTED]

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Advances in Display Devices

The advances in CRT (TV screen) display devices during the past decade have been fantastic. Complex perspective images can now be drawn, rotated, enlarged or reduced in size on the screen. A line drawing of a known image can be scaled and superimposed on a photographic image, and its shadow projected in accordance to the position of the sun. The two images can thus be compared to determine if the photographic image is or is not the same as the known image. TSSG/DED, in cooperation with other NPIC Divisions, has been investigating various display systems and evaluating their potential. Among those systems that appear most promising is the [] Graphics Terminal produced by []. The illustration shows an operator manipulating a perspective image of a lunar excursion module on such a terminal. The [] system can be used as an interface between man and the computer to allow the experienced programmer to get the most value from the computer. It can also be used by someone with no previous programming experience to obtain dynamic pictorial information impossible to depict on any other output device.

A two-part program on computer graphics will be shown at 10 P.M. on Channel 26 on April 5 and 12. Included on the show will be a demonstration of the [] equipment as well as other systems produced by leading manufacturers. (Monitor is [])



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(Classification)

R&D NEWS NOTES

(Date)

TO: Editor, R&D NEWS NOTES, TSSG/DED

FROM:

I would like to offer my comments/questions concerning some of the following items.

- a. Donut Shaped Cover Plate
- b. Making Scale Models More Useful
- c. 14 Tons or .5 Microns
- d. Advances in Display Devices
- e. Other